

S/N 09/871,130

PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	ALLEN ET AL.	Examiner:	R. SHAFER
Serial No.:	09/871,130	Group Art Unit:	2872
Filed:	MAY 31, 2001	Docket No.:	7780.453USD1
Title:	OPTICAL DEVICES USING REFLECTING POLARIZING MATERIALS		

CERTIFICATE UNDER 37 CFR 1.6(d):

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*Carol J. Muehl*  
CAROL J. MUEHL

RESPONSE

Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

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This response addresses the Office Action mailed November 19, 2002. Claims 13 and 21-31 are pending in this application.

In the Office Action, claims 13, 25, 26 and 31 were rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,751,388 to Larson. Applicants respectfully traverse this rejection. In the Office Action, the Examiner refers to Figure 4 of Larson and compares the backscattering polarization sensitive scattering element (PSSE) 109 to the diffusely reflecting polarizer of claims 13 and 26.

Claim 13 relates to a display apparatus including a light cavity, where the light cavity reflects incident light with a first degree of depolarization. The display apparatus also includes a diffusely reflecting polarizer that transmits a component of light having a first polarization and diffusely reflects a component of light having a second polarization. When the polarizer reflects the light of the second polarization it does so with a second degree of depolarization that is

greater than the first degree of depolarization. Therefore, the diffusely reflecting polarizer provides some change in polarization upon reflection while the light cavity is more polarization preserving than the polarizer. As a result, at least a portion of the diffusely reflected light of the first polarization (e.g. resulting from the depolarization from reflection from the diffusely reflecting polarizer) is reflected by the light cavity without depolarization toward the polarizer for transmission therethrough.

In contrast, Larson teaches that the back scattering PSSE 109 returns light of one polarization to the back light cavity and the back light cavity provides a change in the polarization state. Larson, Col. 4, lines 48-54. Larson does not teach that the light back-scattered from the PSSE 109 will have a degree of depolarization greater than the degree of depolarization of the mirror 105. As discussed in relation to Figure 4 of Larson, light that does not pass through the PSSE 109 is backscattered or reflected. Larson, Col. 10, lines 9-10. Light that is backscattered from the PSSE 109 passes through the quarterwave retarder 108, which converts it to circular polarization. Larson, Col. 10, lines 7-10. This light then passes through the diffuser 107, face 106 and light guide 102 before it is reflected from the mirror 105. Upon reflection by mirror 105, the circular handedness of the polarization is reversed so that it will match the pass-axis of the PSSE 109 after by the next pass through the retarder 108. Larson, Col. 10, lines 15-18. In summary, the PSSE 109 reflects or backscatters light of a first polarization and the quarterwave retarder 108 and the mirror 105 work together to alter the polarization before the light is again transmitted to the PSSE. The diffusing regions 104 in the backlight 101 tend to depolarize some of the light that they scatter or deflect. Larson does not teach that a diffusely reflecting polarizer will reflect light with a certain degree of depolarization that is greater than the degree of depolarization caused by reflection from a light cavity.

Claim 26 relates to a display apparatus including a light cavity that reflects incident light with a first degree of depolarization for incident light of a first polarization. The display apparatus of claim 26 also includes a diffusely reflecting polarizer that reflects light of a second polarization with a second degree of depolarization greater than the first degree of depolarization. In claim 26, the first degree of depolarization is specified to be substantially zero. In contrast, Larson does not teach that the PSSE reflects or backscatters incident light with a degree of depolarization larger than that caused by reflector from the light cavity. The

diffusing regions 104 in the backlight 101 tend to depolarize some of the light that they scatter or deflect, so the backlight 100 will not have a degree of depolarization that is substantially zero.

For the reasons discussed above, claims 13 and 26 are respectfully submitted to be in condition for allowance and patentable over Larson. For at least the same reasons, dependent claims 21-25 and 27-31 are also believed to be in condition for allowance.

Applicants note with appreciation the indication that claims 21-24 and 27-30 would be allowable if rewritten in independent form.


Applicants acknowledge that the inventorship of this nonprovisional application has been changed in view of the papers filed on June 19, 2002 so that the named inventors of this application are Elisa M. Cross, Richard C. Allen, and Ronald J. Tabar.

Favorable action at an early date is respectfully solicited. The Examiner is encouraged to contact Applicants undersigned representative if such contact would be helpful in any way.

Respectfully submitted,

MERCHANT & GOULD P.C.  
P.O. Box 2903  
Minneapolis, Minnesota 55402-0903  
(612) 332-5300

Date: March 18, 2003

  
Katherine M. DeVries Smith  
Reg. No. 42,157  
KDS:PSTklg

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## Merchant & Gould

An Intellectual Property Law Firm

3200 IDS Center  
80 South Eighth Street  
Minneapolis, Minnesota  
55402-2215 USA  
TEL 612.332.5300  
FAX 612.332.9081  
www.merchant-  
gould.com

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TO: Commissioner for Patents  
Attn: Examiner R. Shafer  
Patent Examining Corps  
Facsimile Center  
Washington, D.C. 20231

FROM: Katherine M. DeVries Smith

OUR REF: 7780.453USD1  
TELEPHONE: 612.336.4710

Total pages, including cover letter: 6

PTO FAX NUMBER 1-703-872-9318

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Response, Petition for Extension of Time,  
Change of Correspondence Address

Applicant: ALLEN ET AL.  
Serial No.: 09/871,130  
Filed: MAY 31, 2001  
Group Art Unit: 2872  
Our Ref. No.: 7780.453USD1

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